



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q62085

Akira YAMAGUCHI

Appln. No.: 09/782,042

Group Art Unit: 2871

Confirmation No.: 8214

Examiner: Minh Toan T. TON

Filed: February 14, 2001

For: COLLIMATING PLATE, LIGHTING APPARATUS AND LIQUID CRYSTAL DISPLAY APPARATUS

RESPONSE TO ELECTION OF SPECIES REQUIREMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

The Examiner has identified the application as containing claims directed to three (3) distinct species. The Examiner has required the Applicant to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted.

Applicant has been advised that a response to this requirement shall include an identification of the species that is elected and a listing of all claims readable thereon. The species identified by the Examiner are as follows:

Species I - the specific of the device comprising a collimating plate having a particular formula $Sr \geq 2t \times \tan\theta + R$ (claims 1-11);

Species II - the specific of the device comprising a collimating plate having a particular formula $Sa \geq 2t \times \tan\theta + A$ and $Sb \geq 2t \times \tan\theta + B$ (claims 12-17); and

Species III - the specific of the device comprising a collimating plate having a particular formula [see page 61, lines 2-3, formula (4) and formula (5) (claims 18-23).]

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The Examiner believes there are currently no generic claims. Applicant has been advised that a response to this requirement shall include an identification of the species that is elected and a listing of all claims readable thereon.

In response to the Examiner's requirement, Applicant provisionally elects Species I, for examination on which claims 1-11 are readable. However, for the reasons set forth below, this provisional election is made with traverse.

Applicant submits, as noted below, that the Election of Species Requirement is improper with respect to the asserted restriction of species, I-III. Moreover, Applicant submits that the added burden to Examiner in examining claims directed to all three asserted species simultaneously would be minimal. For at least these reasons, Applicant requests withdrawal of the Restriction requirement.

In particular, the collimating plates recited in claim 1, which correspond to Figs. 1 to 6B, of alleged Species I, and recited in claim 12, which correspond to Figs. 7 to 9, of alleged Species II, respectively, both utilize a multitude of microlenses with a spherical surface. Further, the microlenses are disposed in an arrayed manner and have the same configuration except for the respective shapes of microlens and the light entrance area. For example, in claim 1, the shapes of the microlens and light entrance area are both circular while in claim 12 they are both rectangular. Naturally, the shape of the light entrance area corresponds to the shape of the microlens, e.g., circular to circular or rectangular to rectangular, etc., because the microlenses utilized in each example are those having a spherical surface.

Moreover, what is recited in the respective "wherein" clauses of claims 1 (Figs. 1 to 6B) and 12 (Figs. 7 to 9) that differentiates one claim from the other is the relationship between the size (S_r, S_a, S_b) of the microlens with a spherical surface, the size (R, A, B) of the light entrance area, the thickness, t , of the lens substrate, and the refractive index, n , of the lens substrate. This relationship, however, can be expressed in a single formula, as follows:

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$$(S_r, S_a, S_b) \geq 2t \times \tan\theta + (R, A, B), \text{ wherein } \theta = \sin^{-1}(1/n)$$

As seen from the discussion above, the collimating plates as recited in claims 1 and 12 are based on the same technical idea and are not patentably distinct from each other.

Particularly in claim 12, in which the shape of the microlens is rectangular, with a side of the rectangle having a length S_a and another side a length S_b , and the shape of light entrance area is also rectangular with a side having a length A and another side a length B , if the shapes of microlenses and the light entrance area are both square, that is to say, if $S_a = S_b$ and $A = B$, the two formulae in the claim will be unified into one formula which is coincident with the single formula in claim 1.

As stated above, in each of the collimating plates according to claims 1 and 12, the relationship between the size of the microlens, the size of the light entrance area, as well as the thickness and the refractive index of the lens substrate, is defined based on one and the same technical idea. That is, they are directed to achieving an object and effect of the invention of providing a providing a collimating plate possessing an excellent collimating capability, that can issue a collimated light which has a high luminance and is of good directivity. Therefore, the collimating plates in claims 1 and 12 should have at least been grouped together in the same species.

Furthermore, the collimating plate recited in claim 18 has a similar configuration to the plate recited in claim 1. However, the microlenses utilized in a plate according to claim 18 have an ellipsoidal surface while the microlenses utilized in the light diffusing plate in claim 1 have a spherical surface. The formulae recited in claim 18 are different, indeed, in form from the formula in claim 1. The difference resides only in the fact that a spherical surface has a unique center while an ellipsoidal surface has two focuses. The formulae in claim 18 are similar to the formula in claim 1 in that they define the relationship among the size of a microlens utilized, the size of a light entrance area, the thickness of the lens substrate, and the refractive index of the

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lens substrate. Accordingly, the collimating plates in claims 1 and 18 have the same object and effect.

For the reasons set forth above, Applicant respectfully traverses the election of species requirement with respect to species I-III or, in the alternative, at least with respect to species I and II.

Although Applicant has provisionally elected species I, Applicant reserves the right to subsequently file a generic claim applicable to all species and, if necessary, Applicant reserves the right to file a Divisional Application directed to non-elected claims 12-23.

Applicant submits that if any of the elected claims are found to be allowable, claims dependent therefrom should be similarly be considered allowable in the same application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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Date: March 11, 2003

Attorney Docket No.: Q62085